



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:  
MAX FRIEDHEIM

Application No.: 10/066,281

Filing Date: 02/01/2002

FOR: SUPERHEATED VAPOR  
GENERATOR SYSTEM AND METHOD

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Kindly enter the within reply brief re appeal in response to the examiner's  
answer mailed 08/06/2009.

REPLY BRIEF RE APPEAL

EXAMINER: S.Y. PAIK

Art Unit: 3742

I hereby certify that this correspondence is  
deposited with the United States Postal Service  
with sufficient postage as First Class Mail in an  
envelope addressed to Commissioner for Patents,  
PO Box 1450, Alexandria, VA 22313-1450, on  
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DATE:

BY:

## STATUS OF CLAIMS

Claim 1. (Under Final Rejection and Appeal). An improved vapor generator and control system comprising:

- (1) a vaporization chamber for generating superheated vapor substantially instantaneously from liquid upon its entry therein, said vaporization chamber defining at least one input for input therethrough of liquid for vaporization in said vaporization chamber;
- (2) liquid supply means connectible to said vaporization chamber for supplying liquid thereto through said input; and
- (3) adjustable control means for adjustably controlling ongoing input of liquid from said liquid supply means during ongoing input of said liquid from said liquid supply means into said vaporization chamber, adjustment of liquid input by said adjustable control means being substantially simultaneously reflected in adjustment of output of superheated vapor, whereby output of superheated vapor is highly precisely adjustably controllable while said system is in operation.

Claim 2. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said adjustable control means adjustably controls volume of liquid input into said vaporization chamber and thereby adjustably controls volume of output of superheated vapor from said vaporization chamber.

Claim 3. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 further including at least one output port for output therethrough of superheated vapor from said vaporization chamber, said at least one output port including means connectable to output control means for controlling output from said vaporization chamber.

Claim 4. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said adjustable control means for adjustably controlling input of liquid into said vaporization chamber adjustably controls pressure of liquid input into said vaporization chamber and thereby adjustably controls pressure of output from said vaporization chamber.

Claim 5. (Under Final Rejection and Appeal). The invention as set forth in Claim 3 wherein said output control means controls volume of output from said vaporization chamber.

Claim 6. (Under Final Rejection and Appeal). The invention as set forth in Claim 3 wherein said output control means comprises at least one valve member.

Claim 7. (Under Final Rejection and Appeal). The invention as set forth in Claim 3 wherein said output control means includes means for directing in a selected direction superheated vapor from said vaporization chamber.

Claim 8. (Under Final Rejection and Appeal). The invention as set forth in Claim 7 wherein said output control means comprises at least one valve member.

Claim 9. (Under Final Rejection and Appeal). The invention as set forth in Claim 7 wherein said output control means is adjustable for directing superheated vapor from said vaporizing chamber in a plurality of selected directions.

Claim 10. (Under Final Rejection and Appeal). The invention as set forth in Claim 8 wherein said at least one valve member comprises a plurality of valve members at least two of which are adjustable to direct output superheated vapor in substantially perpendicular directions.

Claim 11. (Under Final Rejection and Appeal). The invention as set forth in Claim 3 wherein said output port is connectable to at least one object to which superheated vapor is to be directed.

Claim 12. (Under Final Rejection and Appeal). The invention as set forth in Claim 3 wherein said output control means is connectable to at least one object to which superheated vapor is to be directed.

Claim 13. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said vaporization chamber has at least a portion of an inner surface which is rough.

Claim 14. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said vaporization chamber has at least a portion of an inner surface which defines at least one groove.

Claim 15. (Under Final Rejection and Appeal). The invention as set forth in Claim 14 further including at least one groove other than the first-mentioned groove and wherein said first-mentioned groove and said second-mentioned groove intersect.

Claim 16. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said vaporization chamber has at least a portion of an inner surface which defines a plurality of grooves.

Claim 17. (Under Final Rejection and Appeal). The invention as set forth in Claim 16 wherein said plurality of grooves vary substantially randomly in depth in a range substantially .030 inch to .050 inch.

Claim 18. (Under Final Rejection and Appeal). The invention as set forth in Claim 4 wherein said output control means is configured to be hand-held by an operator and to be controlled by said operator.

Claim 19. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said vaporization chamber has at least a portion of an inner surface which includes at least one perforation.

Claim 20. (Under Final Rejection and Appeal). The invention as set forth in Claim 1 wherein said vaporization chamber has at least a portion of an inner surface which includes at least one irregularity.

Claim 21. (Under Final Rejection and Appeal). A method of fabricating a superheated vapor generator and control system comprising the steps of:

- (a) providing at least two separate parts of a vapor generator;
- (b) fastening said parts together to form a superheated vapor generator defining a vaporization chamber, with at least one input thereto, said superheated vapor generator having capability for substantially instantaneous vaporization of liquid upon entry thereof into said vaporization chamber;
- (c) providing liquid supply means connectible to said input of said vaporization chamber for supplying liquid thereto; and;
- (d) providing adjustable control means for adjustably controlling ongoing input of liquid into said vaporization chamber during said ongoing input of liquid, adjustment of liquid input by said adjustable control means being substantially simultaneously reflected in adjustment of output of superheated vapor thereby providing the capability of highly precisely adjustably controlling output of superheated vapor from said vaporization chamber without requiring said system to cease operation.

Claim 22. (Under Final Rejection and Appeal). The method as set forth in Claim 21 further including the step of providing control means at the output of said vapor generator.

Claim 23. (Under Final Rejection and Appeal). The method as set forth in Claim 21 further including the step of defining at least one groove in at least a portion of an inner surface of at least one of said ports.

Claim 24. (Under Final Rejection and Appeal). The invention as set forth in Claim 21 further including the step of defining a plurality of grooves in at least a portion of an inner surface of at least one of said ports, such that said grooves vary in depth substantially randomly in height and depth in the range of .030 inch to .050 inch.

Claim 25. (Under Final Rejection and Appeal). The invention as set forth in Claim 22 wherein said output control means are adjustable to control the direction of superheated vapor from said vaporization chamber.

Claim 26. (Under Final Rejection and Appeal). A method for cleaning selected objects comprising the steps of:

- (a) generating superheated vapor by substantially simultaneously vaporizing liquid into superheated vapor through subjecting said liquid to superheating; and
- (b) providing capability of adjustably controlling volume, pressure or velocity on line of output superheated vapor for a selected object to be cleaned by adjustably controlling in an ongoing manner volume, pressure or velocity of said liquid upon being subjected to said superheating, wherein said output is substantially instantaneously adjustable upon adjustment of said input thereby providing highly precise control of output of superheated vapor.

Claim 27. (Under Final Rejection and Appeal). A method for propulsion comprising the steps of:

- (a) generating superheated vapor by substantially instantaneously vaporizing liquid into superheated vapor through subjecting said liquid to superheating; and providing the capability of highly precise control of output of superheated vapor substantially continuously to provide propulsion, by adjustable control of volume, pressure or velocity of said liquid, upon being subjected to said superheating, adjustment of said adjustable control being substantially simultaneously reflected in said output of superheated vapor.

**Grounds of Rejection to be Reviewed on Appeal.**

- (1) Whether new grounds of rejection under 35 USC 112 will render some or all of the appealed claims unpatentable.
- (2) Whether Claims 1-8 and 11-27 are unpatentable under 35 USC 103(a) over Friedheim '556 (U.S. Pat. No. 5,471,556) or Friedheim '037 (U.S. Pat. No. 4,414,037) in view of Hutchinson (U.S. Pat. No. 6,393,212) and further in view of O'Connor (U.S. Pat. No. 2,779,375),
- (3) Whether Claims 9 and 10 are unpatentable under 35 USC 103 (a) over Friedheim '556 (U.S. Pat. No. 5,471,556) or Friedheim '037 (U.S. Pat. No. 4,414,037), in view of Hutchinson and further in view of Berthoud (U.S. Pat. No. 3,863,841)

## **ARGUMENT.**

- A. The new ground(s) of rejection is(are) not well taken and should have no bearing upon the patentability of the claims on appeal.

It is unclear what specifically the examiner is referring to on the new ground of rejection, 35 USC 112, first paragraph, as “failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to convey to one skilled in the relevant art that the inventor(s) at the time the application was filed, had possession of the claimed invention... the applicant did not have in possession the structure and its equivalent thereof under the claimed scope of the ‘liquid supply means.’ ”

This appears to be predicated upon an entry in plaintiff’s opening brief in the section entitled “summary of claimed subject matter,” in which the claim element “liquid supply means” is stated to comprise reference numeral 40. The examiner makes much of the fact that in a prior filing the applicant stated that the “liquid supply means” comprises element 40, element 72, and element 38.

It appears that the elements 38, 40, 72, as the “liquid supply means” satisfied the examiner’s concerns in that the examiner did not object to the statement of grounds of rejection submitted with the opening brief which did not include a 35 USC 112 rejection.

Now apparently because of the omission of elements 38, 72 in the summary of claim 1, in some manner the 35 USC 112 rejection is resurrected. To obviate this rejection, applicant stipulates to amending claim 1 in the summary of claimed subject matter to read as follows:

“Liquid supply means (Ref. Nos. 38, 40, 72: Fig.1, specification p.4, line 22; Fig. 1 specification p.4, line 23; Fig.2 specification p.5, line 21).”



In any event, the examiner wholly ignored the requirement for a valid rejection on 35 USC 112 first paragraph which requires that the examiner's answer must "explain" how the first paragraph of 35 USC 112 was not complied with, including, as appropriate, how the specification and drawings, if any, (i) do not describe the subject matter described by each of the rejected claims.

- (i) Would not enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims without undue experimentation including a consideration of the undue experimentation factors set forth in MPEP sec. 2164.01 (a), and
- (ii) do not set forth the best mode contemplated by the appellant of carrying out his or her invention." MPEP sec. 1207.02 (A) (9).

Obviously, no attempt at all was made by the examiner to comply with this requirement. No mention is made of "undue experimentation factors" set out in MPEP sec. 2164.01 (a) which involve at least eight different factual inquiries nor is there any reference to factor (iii) stated above.

Also ignored is the holding of the Federal Circuit in *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 77 USPQ 2d 1041 (Fed. Cir. 2005) that any part of the specification can support an enabling disclosure even a background section that discusses the subject matter disclosed therein.

Out of an abundance of caution, appellant will reiterate the argument which was made to cause the dropping of the 35 USC 112, second paragraph rejection. Briefly, as earlier stated, the term "liquid supply means" is clearly and unambiguously defined in the application. The term "liquid supply means" clearly denotes means for providing liquid supply. In the specification, the means for providing liquid supply comprise liquid pickup tube inlet 38, liquid pickup tube 40, pump 72, and reservoir (unnumbered) shown as reference numeral 30 in U.S. Pat. No. 4,414,037 incorporated by reference into the present patent application. Apparently this argument satisfied the examiner since the examiner approved the issues for review on appeal set forth in the opening brief, which issues did not include any matters related to 35 USC 112.

It should be noted that the term “liquid supply means” is employed in connection with the further terminology “for supplying liquid thereto [vaporization chamber] ...” This is obviously a means plus function claim and is clearly defined in the specification with the elements that are employed to provide liquid to the vaporization chamber.

Accordingly, appellant respectfully submits that the new ground(s) of rejection, apparently 35 USC 112, first and second paragraphs, wholly lack validity and cannot affect patentability of the invention.

B. Regarding the first ground of rejection to be reviewed on appeal as set forth at page 17 of Appellant’s Amended Opening Brief—claims 1-8 and 10-27-- the examiner’s answer is unresponsive to, and fails to deal with, the points raised by the Appellant, merely repeating the final rejection with minor variations.

Per rules governing the Examiner’s Answer on appeal (MPEP Sec. 1200 et. seq. and 37 CFR 41.39), the examiner’s answer must (i) state the ground of rejection and point out where each of the specific limitations recited in the rejected claims is found in the prior art relied on in the rejection.

The alleged description of Huchinson in the Examiner’s answer is essentially the same as in the final rejection and as a result, some points regarding inadequacy of the final rejection were made in the opening brief; however, out of an abundance of caution, a complete presentation is made herein from the point of view of the requirements for examiner’s answers set out hereinabove.

- (1) The requirement for pointing out specific limitations from the reference found in rejected claims is not complied with in the examiner’s answer.

“Huchinson discloses a vapor generator having a vaporization chamber, the input port, the adjustable control means (22) for controlling the liquid supply means including a pump (30) which is connected to a liquid supply source (see Figure 11) and to the

vaporization chamber, for controlling the input liquid into the vaporization chamber.”  
(Examiner’s answer, page 5).

Contrary to the position taken in the examiner’s answer as stated above, in Huchinson control of pressure and volume is primarily accomplished by output variable pressure regulating control valve 48. Huchinson, Col. 6, lines 59-60. Also contrary to the position stated in the examiner’s answer, Huchinson explains the true function of elements 20 and 22 as follows:

“A centrally locating [sic.] heating body 15 (Fig. 4) receives power input at 18 from a heater control 20 controlled by electronic control system 22. Fluid is supplied to inlet 12 from supply tube 24 connected to reservoir 26 or other source of fluid. Fluid is pumped via tube 24 from tank 26 by a low volume pulse pump 30 through check valves 32 and 34.

“Electronic control system 22 monitors the temperature and pressure in steam generating cylinder 10 and also the level of water in the water tank 26. Pulse type piston pump 30 provides low flow capacity and pressure requires to inject feed water into the input 12 against the steam generating cylinder 10 internal pressure as regulated by output variable pressure regulating control valve 48.” Huchinson, Col.6 lines 28-37; 54-60.

In striking contrast Applicant’s invention employs adjustably controlled fluid input, not controlled temperature or heat content, and as a result Applicant’s invention has the extremely desirable operating characteristic of capability of rapid variation of output of superheated vapor under precise and responsive control. Thus, Huchinson with its slow passage of steam through baffles, output control of pressure and volume and control of temperature and heat, teaches away from Applicant’s invention, which involves only input fluid control and very rapid response thereto at the output, and does not show, suggest or disclose Applicant’s novel and unobvious control system and combination.

(2) The requirement for pointing out “why it would have been obvious at the time the invention was made to a person of normal skill in the art to have modified the primary reference to arrive at the claimed subject matter” was not met in the Examiner’s answer, wherein the flat statement is made that “in view of Huchinson, it would have been obvious to one of ordinary skill in the art to adapt Friedheim ‘556 or Freidheim ‘037 with the liquid supply means including a liquid source with a control means to also adjustably control the pump to provide the desired metered

amount of liquid to achieve the desired controlled superheated steam during the ongoing input of the liquid during the operating process.”

Clearly, this statement fails to comply with the requirement stated above namely why it would have been obvious at the time to have modified the primary reference to arrive at the claimed subject matter.

The statement is incorrect in that in Appellant’s invention there is no desired metered amount of liquid but rather an adjustably variable amount of liquid input which can be varied during operation so that the output of superheated vapor could be rapidly changed during deployment of the apparatus incorporating the invention. There is no benefit in incorporating the Huchinson output control, valve, and the like into the basic reference. The output of superheated vapor in Huchinson is achieved through output control 48 not input control. Inlet pump 30 is for the purpose for providing “low flow capacity and pressure required to inject feed water in to the input 12 against the steam generating cylinder 10 internal pressure as regulated by output variable pressure regulating control valve 48,” as stated in Huchinson.

As recited in claim 1, for example, the invention includes

“adjustable control means for adjustably controlling ongoing input of liquid from said liquid supply means during ongoing input of said liquid from said liquid supply means into said vaporization chamber, adjustment of liquid input by said adjustable control means being substantially simultaneously reflected in adjustment of output of superheated vapor whereby output of superheated vapor is highly precisely adjustably controllable while said system is in operation.”

There is no “metered” amount at all. As shown in the Munson and Friedheim declarations of record, the invention fulfilled a long felt but previously unfulfilled need for cleaning / testing apparatus employing rapidly variable superheated vapor output.

Regarding check valve 90, the examiner expresses a misunderstanding thereof. Part 90 comprises a check valve (‘556 patent) which

“not only blocks backflow and prevents intake of solids into the apparatus but affects by particular parameters the liquid content of superheated vapor produced by system 10. ‘556 patent, Col. 4 lines 13-17.

“A check valve 10 is identical to check valve 100.” ‘556 Col. 4 lines 22-24.

This pair of check valves 90,100 clearly does not have anything to do with variable liquid flow into the vaporization chamber.

Accordingly, the PTO has utterly failed to discharge its burden of proof on the issue of patentability of claims 1-8, 10-27 and said claims should be allowed.

The examiner’s answer to the compelling evidence presented by Appellant concerning long-felt but unfulfilled need fulfilled by the invention, is insufficient.

In the declarations of Max Friedheim and Terry Munson of record herein, it is shown conclusively that the present invention with its ability to provide variable amounts of superheated vapor based upon adjustably controllable fluid input, fills a long-felt but unfulfilled need for such rapidly variable output. The fact that the Munson Declaration was filed to answer an inquiry of the examiner appears to cause the examiner to dismiss it or give it little weight; however, neither Applicant nor his attorney is aware of any legal authority for this and in numerous cases in Applicant’s attorney’s experience, such declarations are filed to address an examiner’s concerns.

C. Regarding the second ground of rejection to be reviewed on appeal as set forth on page 17 of Appellant’s amended opening brief—claims 9-10—the examiner’s answer is unresponsive to, and fails to deal with, the points raised by the appellant, merely repeating the final rejection with minor variations.

The examiner’s answer regarding the rejection of claims 9-10 suffers from the same defects of form and substance as pointed out in section B above regarding the rejections

of claims 1-8, 10-27, and such points are repeated and incorporated by reference herein in this section.

The Berthoud reference is entirely out of the frame of reference of one of normal skill in the art to which this invention pertains, and the arbitrary importation of elements of Berthoud into the already dubious combination of Friedheim and Huchinson, merely compounds the error and is a classic case of forbidden patchwork, hindsight reconstruction.

Accordingly, the PTO has failed to discharge its burden of proof on the issue of patentability of claims 9-10, and the rejection thereof should be withdrawn.

#### D. CONCLUSION

On the basis of the foregoing, it is respectfully submitted that the final rejection herein should be reconsidered and vacated for all claims, and that all claims should be allowed.

Respectfully submitted,  
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